

IN THE UNITED STATE PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of: Nandagopalan  
For: METHOD ACCESS POINT AND PROGRAM PRODUCT  
FOR PROVIDING BANDWIDTH AND AIRTIME FAIRNESS  
IN WIRELESS NETWORKS  
Serial No. 10/566,513  
Filed January 30, 2006  
Art Unit 2617  
Examiner Shedrick, Charles Terrell  
Attorney Docket No. PHUS030255  
Confirmation No. 6162

APPEAL BRIEF

ON APPEAL FROM GROUP ART UNIT 2617

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

This Appeal Brief is submitted both in response to the Notice of Appeal filed February 8, 2010 and to the Final Office Action dated November 9, 2009.

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## **I. REAL PARTY IN INTEREST**

The real party in interest is Koninklijke Philips Electronics N.V., the assignee of record, whose assignment is recorded in the USPTO as of January 30, 2006 on three (3) pages beginning at Reel 017513, Frame 0342.

## **II. RELATED APPEALS AND INTERFERENCES**

Appellant is not aware of any pending appeals, judicial proceedings, or interferences which may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

## **III. STATUS OF CLAIMS**

The status of the claims in the present application is provided as follows:

- a) Claims 1-24 are pending in this application, stand rejected in a Final Office Action dated November 9, 2009, and are the subject of this appeal.
- b) Claims 1, 23, and 24 are independent claims.

## **IV. STATUS OF AMENDMENTS**

The claims listed in Section VIII, Claims Appendix, of this Appeal Brief correspond to the claims as submitted in Appellant's captioned "*Amendment and/or Response under 37 C.F.R. § 1.111*" filed July 16, 2009, where a response to the non-final Office Action dated April 16, 2009 was submitted and entered. All amendments filed in this application have been entered and there are none pending.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

It should be explicitly noted that it is not Appellant's intention that the currently claimed or described embodiments be limited solely to operation within the illustrative embodiments identified below. Furthermore, citations to exemplary descriptions of illustrative embodiments are provided below in association with portions of the claims, which are related to the identified illustrative embodiments, entirely for compliance with, and in satisfaction of, the requirements for filing this appeal. There is no intention to read any further interpreted limitations into the claims as presented. Moreover, it will be appreciated that additional exemplary descriptions, though not cited herein, may be present in this patent application.

The claimed invention, as recited in claim 1, is directed to a method for providing bandwidth fairness in wireless networks (*specification at page 8, lines 7-8*), comprising: receiving at least one stream of packets on an access point for at least one wireless station (*specification at page 10, lines 12-16*); determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station (*specification at page 11, lines 19-24*); defining a ratio between a plurality of streams based on the bandwidth requirement (*specification at page 11, lines 21-24*); based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets (*specification at page 11, line 24—page 12 line 6*); and transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off (*specification at page 9, lines 3-5*).

The claimed invention, as recited in claim 23, is directed to an access point for providing bandwidth fairness in wireless networks (*specification at page 8, lines 7-8*), comprising: means for receiving at least one stream of packets for at least one wireless station (*specification at page 10, lines 12-16*); means for determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station (*specification at page 11, lines 19-24*); means for defining a ratio between a plurality of streams based on the bandwidth requirement (*specification at page 11, lines 21-24*); based on the ratio, means for setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets

(specification at page 11, line 24—page 12 line 6); and means for transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off (specification at page 9, lines 3-5).

The claimed invention, as recited in claim 24, is directed to a program product stored on a recordable medium (specification at page 7, lines 10-11), said medium having stored thereon machine readable instructions that, when executed, implement a method for providing bandwidth fairness in wireless networks (specification at page 8, lines 7-8), said method comprising: receiving at least one stream of packets on an access point for at least one wireless station (specification at page 10, lines 12-16); determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station (specification at page 11, lines 19-24); defining a ratio between a plurality of streams based on the bandwidth requirement (specification at page 11, lines 21-24); based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets (specification at page 11, line 24—page 12 line 6); and transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off (specification at page 9, lines 3-5).

## **VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Certain art-based rejections for this application are based on the following references: U.S. Patent Pub. No. 2005/0018638 to Lindskog (hereinafter "*Lindskog*") and U.S. Patent Pub. No. 2003/0133427 to Cimini (hereinafter "*Cimini*").

The ground of rejection for this application for which review is sought in this appeal is:

1. Whether claims 1-24 are properly rejected by the USPTO under 35 U.S.C. §103(a) as being unpatentable over Lindskog in view of Cimini.

## VII. ARGUMENT

Appellant respectfully traverses the rejections in accordance with the detailed arguments set forth below.

### 1. CLAIMS 1-24 ARE IMPROPERLY REJECTED BY THE USPTO UNDER 35 U.S.C. §103(a) AS UNPATENTABLE OVER LINDSKOG IN VIEW OF CIMINI.

#### A. Claim 1

Claim 1 is an independent claim that serves as a base claim for claims 2-22. Claim 1 requires:

*A method for providing bandwidth fairness in wireless networks, comprising:*

*receiving at least one stream of packets on an access point for at least one wireless station;*

*determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station;*

*defining a ratio between a plurality of streams based on the bandwidth requirement;*

***based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets; and***

*transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off. [Emphasis added].*

On page 4 of the Final Office Action, the Examiner points to Lindskog at least at paragraphs 0016, 0021-0022, and 0051-0053, and figures 1a, 1b, 7, and 8 as allegedly disclosing Appellant's claimed ". . .setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets. . ." The Examiner admits that Lindskog does not explicitly teach determining a bandwidth requirement for a transmission of the at least one stream of packets to at least one wireless station; defining a ratio between a plurality of streams based on the bandwidth requirement, and relies on Cimini as allegedly disclosing these features of claim 1. As such, the

Examiner suggests that it would be obvious to a person having ordinary skill in the art to combine Lindskog and Cimini to suggest all limitations of claim 1. However, Appellant respectfully points out that Lindskog and Cimini, separately or in combination, are completely different from the claimed invention.

Lindskog relates to a wireless station and a transmission method in a wireless local area network whereby data frames are divided into frame fragments for the purpose of reducing power requirements. (See, for example, Lindskog at 0018). Lindskog at 0030-0031 describes a MAC data frame which includes a DURATION/ID field which includes a data field for setting a more fragment bit. Lindskog at 0051 describes the more fragment bit (MF), whereby each fragment, except the last fragment of a burst, shall have a more fragment bit in the frame header set to 1 (MF=1) whereas the last fragment has MF=0. In other words, the more fragment bit of Lindskog apparently is set based on whether or not the fragment is the last fragment of a burst. See also Lindskog at 0070 and 0073, whereby MF=0 if the fragment is the last fragment. However, in contrast to Appellant's claim 1, Lindskog does not set the more fragment bit based on a ratio between a plurality of streams based on the bandwidth requirement. Rather, Lindskog is completely different from the claimed invention because Lindskog apparently sets the more fragment bit based on whether the fragment is the last fragment of a burst.

In the Response to Arguments section on page 2 of the Final Office Action, the Examiner relies on Cimini as allegedly defining a ratio between a plurality of streams based on the bandwidth requirement. Assuming, arguendo, that Cimini teaches defining a ratio between a plurality of streams based on the bandwidth requirement, an assumption of which Appellant does not admit nor concede, Cimini clearly does not teach or suggest ***based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets***, as required by Appellant's claim 1. Thus, there is no suggestion in either reference to modify the "defining a ratio" as allegedly taught by Cimini and to modify the MF bit as taught by Lindskog in order to arrive at Appellant's claimed invention.

Cimini relates to a method of shaping data packet transmissions by nodes in a wireless network. However, Cimini does not disclose or suggest a more fragment bit and Cimini does not teach or suggest based on the ratio, setting a more fragment bit of the at

least one stream of packets when there are successive packets in the at least one stream of packet. Thus, Cimini in combination with Lindskog fails to meet or even suggest all the limitations of claim 1.

By way of illustration, a non-limiting example of an embodiment of Appellant's claimed invention is found at page 11 line 17--page 12 line 6 of the specification as originally filed. In this non-limiting example, the fragment setting system would set the more fragment bit in a MAC header accompanying stream to allow transmission of packets successively based on a ratio of the bandwidth requirements of a plurality of data streams.

The limitations of claim 1 would not be obvious to one of ordinary skill in the art upon the teachings of Lindskog and Cimini because Lindskog does not teach or suggest a plurality of data streams, and as such, Lindskog may not teach or suggest a ratio is defined between a plurality of streams. Accordingly, Lindskog may not teach or suggest setting a more fragment bit based on the ratio. Furthermore, Cimini does not disclose the more fragment bit at all and as such, may not teach or suggest setting a more fragment bit based on a ratio. Accordingly, there is no suggestion in either reference to modify the teachings of Cimini and to modify the MF bit as taught by Lindskog in order to arrive at Appellant's claimed based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets.

In light of all of the remarks above, it is respectfully submitted that the limitations of independent claim 1 would not have been obvious to a person having ordinary skill in the art based on Lindskog and Cimini, either separately or in combination. Thus, it is believed that claim 1 is allowable under 35 U.S.C. §103. It is respectfully requested that the Board reverse this rejection of claim 1.

## **B. Claim 23**

Claim 23 is an independent claim. Claim 23 calls in part for:

*based on the ratio, means for setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets.*

Claim 23 is directed to an access point for providing bandwidth fairness in wireless networks, however, in the Final Office Action the Office rejects this claim using the same

arguments as for claim 1. Appellant respectfully submits that claim 23 must be interpreted on its own merits.

However, in view of the Office using the same arguments as in claim 1, Appellant essentially repeats the argument from claim 1 above and applies them to the specific features and interpretation of claim 23 without any loss of generality or limitation. It is respectfully submitted that Lindskog and Cimini, separately or in combination, do not disclose or even suggest all the features of claim 23. It is respectfully requested that the Board reverse this rejection of claim 23.

### **C. Claim 24**

Claim 24 is an independent claim. Claim 24 calls in part for:

*based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets.*

Claim 24 is directed to a program product stored on a recordable medium, however, in the Final Office Action the Office rejects this claim using the same arguments as for claim 1. Appellant respectfully submits that claim 24 must be interpreted on its own merits.

However, in view of the Office using the same arguments as in claim 1, Appellant essentially repeats the argument from claim 1 above and applies them to the specific features and interpretation of claim 24 without any loss of generality or limitation. It is respectfully submitted that Lindskog and Cimini, separately or in combination, do not disclose or even suggest all the features of claim 24. It is respectfully requested that the Board reverse this rejection of claim 24.

### **D. Dependent Claims 2-22**

Each of claims 2-22 depend from allowable independent base claim 1. Each dependent claim includes all the features of claim 1 including all the particular features discussed above. In view of this dependence and for the sake of brevity in this brief, Appellant essentially repeats the above arguments from claim 1 and applies them to each of dependent claims 2-22, respectively. Thus, it is submitted that claims 2-22 are allowable at least by virtue of their dependency from an allowable base claim and because each

claim recites further distinguishing features thereover. It is respectfully requested the Board reverse the rejection of dependent claims 2-22.

**Conclusion**

In light of the above, Appellant respectfully submits that the rejection of claims 1-24 is in error, legally and factually, and must be reversed.

Respectfully submitted,

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## VIII. CLAIMS APPENDIX

1. (previously presented) A method for providing bandwidth fairness in wireless networks, comprising:

receiving at least one stream of packets on an access point for at least one wireless station;

determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station;

defining a ratio between a plurality of streams based on the bandwidth requirement;

based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets; and

transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off.

2. (previously presented) The method of claim 1, wherein the step of setting the more fragment bit, comprises setting the more fragment bit in a MAC header accompanying the at least one stream of packets to a value of 1.

3. (previously presented) The method of claim 1, wherein the at least one stream of packets comprises a plurality of packets.

4. (previously presented) The method of claim 1, wherein the more fragment bit is not set in a last packet of the at least one stream of packets to be transmitted.

5. (previously presented) The method of claim 1, comprising:

calculating an airtime requirement for transmitting the packet to the at least one

wireless station;

setting a time counter on the access point based on the airtime requirement; and  
determining whether the packet can be transmitted before the time counter expires.

6. (previously presented) The method of claim 5, further comprising transmitting the packet to the access point.

7. (previously presented) The method of claim 5, further comprising splitting the packet into a set of fragments if the packet cannot be transmitted before the time counter expires.

8. (previously presented) The method of claim 7, further comprising transmitting the set of fragments until the time counter expires.

9. (previously presented) The method of claim 7, wherein the splitting step comprises splitting the packet into equal sub-packets to yield a set of fragments.

10. (previously presented) The method of claim 5, wherein the airtime requirement is calculated based on a size and a transmission rate of the packet.

11. (previously presented) The access point of claim 23, further comprising:

means for calculating an airtime requirement for a packet received on the access point for the at least one wireless station;

means for setting a time counter based on the airtime requirement; and

means for determining whether the packet can be transmitted to the at least one wireless station before the time counter expires.

12. (previously presented) The access point of claim 11, further comprising means for communicating the packet if the packet can be transmitted to the at least one wireless station before the time counter expires.
13. (previously presented) The access point of claim 11, further comprising means for splitting the packet into a set of fragments if the packet cannot be transmitted to the at least one wireless station before the time counter expires.
14. (previously presented) The access point of claim 13, wherein the means for splitting the packet splits the packet into equal sub-packets to yield the set of fragments.
15. (previously presented) The access point of claim 11, wherein the airtime requirement is calculated based on a size and a transmission rate of the packet.
16. (previously presented) The access point of claim 11, wherein the access point is a wireless access point implemented within a wireless local area network.
17. (previously presented) The program product as defined in claim 24, wherein said medium having stored thereon machine readable instructions that, when executed, implement the method for providing airtime and bandwidth fairness in wireless networks, said method comprising:
  - calculating an airtime requirement for a packet received on the access point for the at least one wireless station;
  - setting a time counter based on the airtime requirement; and
  - determining whether the packet can be transmitted to the at least one wireless station before the time counter expires.

18. (previously presented) The program product of claim 17, further comprising program code for communicating the packet if the packet can be transmitted to the at least one wireless station before the time counter expires.
19. (previously presented) The program product of claim 17, further comprising program code for splitting the packet into a set of fragments if the packet cannot be transmitted to the at least one wireless station before the time counter expires.
20. (previously presented) The program product of claim 19, wherein the program code for splitting the packet splits the packet into equal sub-packets to yield the set of fragments.
21. (previously presented) The program product of claim 17, the airtime requirement is calculated based on a size and a transmission rate of the packet.
22. (previously presented) The program product of claim 17, wherein the program product is implemented on the access point that is implemented within a wireless local area network.
23. (previously presented) An access point for providing bandwidth fairness in wireless networks, comprising:
  - means for receiving at least one stream of packets for at least one wireless station;
  - means for determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station;
  - means for defining a ratio between a plurality of streams based on the bandwidth requirement;

based on the ratio, means for setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets; and

means for transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off.

24. (previously presented) A program product stored on a recordable medium, said medium having stored thereon machine readable instructions that, when executed, implement a method for providing bandwidth fairness in wireless networks, said method comprising:

receiving at least one stream of packets on an access point for at least one wireless station;

determining a bandwidth requirement for transmission of the at least one stream of packets to the at least one wireless station;

defining a ratio between a plurality of streams based on the bandwidth requirement;

based on the ratio, setting a more fragment bit of the at least one stream of packets when there are successive packets in the at least one stream of packets; and

transmitting the successive packets of the at least one stream of packets from the access point to the at least one wireless station without back-off.

## IX. EVIDENCE APPENDIX

No evidence has been submitted pursuant to §§ **1.130, 1.131, or 1.132** of this title. No other evidence has been entered by the Examiner and/or relied upon by Appellant in this appeal, at this time.

**X. RELATED PROCEEDINGS APPENDIX**

Appellant is not aware of any appeals or interferences related to the present application.